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AN ESSAY ON THE ART OF SWIMMING, CONSIDERED AS A MEANS OF SAFETY, HYGIENE AND PLEASURE.

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The Art of Swimming is, perhaps, as old as any other mode of self-conveyance or transportation, if we except that of walking. Man and quadrupeds must, from the first, have used their legs in perambulating the earth; but it could have been scarcely more than a very brief, a momentary lapse of time, till some one of the newly created animals must, either from necessity or choice, been impelled to try the sustaining power of an element which, flowing on every hand, he might meet with in his rambles, and *opus natare est*, find it necessary to swim. Numerous are the animals that exhibit a fondness for the water, and seek occasion to float upon its surface, or submerge themselves in its depths. The beaver, the otter, and the muskrat, the dog, and a hundred other quadrupeds apparently feel as safe on this element as on the land. They plunge into it at a moment's warning, and though they may sink to the ears, swim with an agility and a regularity of motion that manifest their entire confidence in the efficiency of its sustaining power, and a self-possession that seldom ever allows them to be drowned. They swim upon the quiet pool, and skim along the sleeping lake, and with almost equal facility mount the billow and pierce its foaming crest.

To some animals the Creator has given peculiar facilities for swimming, and such, especially, are the *anseres*, whose remarkable adaptation ought alone to convince the atheist of the existence of a designing Divinity, and open his eyes to behold all around him the bright emanations of His being. Both in form and specific gravity, the goose, the duck, and the swan are admirably fitted to float high and safely, and could not drown but by assuming a most unnatural position. Our business, however, is not with those creatures gifted with properties which render a fatal submersion impossible; the goose and the swan, for aught we know to the contrary, might, like the amphibiæ, spend the best half of their life upon the water. Nor is it necessary to consider the natant powers of the animals which, like man, live wholly upon the land, excepting in so far as it may assist in illustrating the subject in relation to the latter, and show how far, and under what circumstances, men may trust themselves upon that powerfully sustaining fluid, on the bosom of which, but from unwarrantable fear, thousands that have annually been drowned, might have ridden in safety. The dog is the quadruped which we most frequently see in the water, and we well know with what readiness and apparent pleasure some varieties of the race leap off upon its surface, straightway aiming for the opposite shore, or making sundry evolutions in the water, and feeling its ability to support them, they seize upon heavy bodies and bear them safely to the land. The dog, ordinarily, does not lie very high upon the water, but he is expert with his limbs, and

his courage and confidence no more forsake him than on the land. Among the other domestic animals, neat cattle swim with much ease, considering their great weight, and with less immersion than, from a consideration of their frequently ponderous horns and compact bodies, we should be inclined, *a priori*, to suppose; even when vast herds, consisting of many hundreds, on their way to market, are driven in thick succession into a wide river, and swim in the closest community, there is seldom, or almost never an instance among them of drowning; indeed, this very circumstance of being pressed in a crowd may inspire each individual with additional confidence, and a sort of emulation more than sufficient to balance the serious inconvenience and impediment arising from the frequent contact and severe attrition of their limbs and bodies. Swine make their way, floating quietly in the stream, as they are compelled, in immense crowds, to cross it for the market, but are said to suffer sometimes from abrasion, or even laceration of the throat, by the action of their fore feet. Sheep are not bad navigators when once they have in view a fixed purpose and are well set out, but this is only when they have lately been shorn, for though they would not be specifically heavier in their fleece, their form and magnitude could not but embarrass their motion and diminish their speed. Excepting a very small number, all animals—the innumerable aerial races together with the equally countless tribes which roam the earth's surface—may, in a living state, be presumed to be specifically lighter than water, and consequently, if not too greatly incommoded by an inunctuous or other ill adapted exterior, would, were they to make propulsive efforts in a right direction, generally escape safely to the shore. Squirrels swim admirably, and have been known in vast numbers to cross over the Ohio river.

Of all the domesticated animals, the horse is the most noble and useful in the water; he swims with less apparent ease than the cow or the dog, which use each fore and each hind leg alternately, and by which sort of action their bodies are made to pass very smoothly along, dividing the yielding mass, and consequently occasioning only a slight commotion, scarcely inconvenient. The horse plunges—drives ahead with strong action of every muscle—striking forward both fore legs at once, and in the next instant both hind ones, he rises high and falls with each alternate stroke and interval, whilst his wide nostrils yet more expand as the air enters and fills his capacious chest; he respires with labor, his full eye glows with anxiety and resolution, and his surges agitate the water into waves all around him. Sooner or later he must tire under the influence of such powerful and incessant action, and if it be continued, become exhausted; but he will endure a long time, carrying a man with his baggage, and harness on his back, contending with waves and current, and safely transport the whole across a wide river to the shore. And why does not the noble animal quail amidst these labors and yield to discouragement, and drown? The land is in his eye, and though not at home on the water, he is fearless of its depth.

The deer is an expert swimmer, most readily launching off upon the water and moving onward with a fleetness that he hopes will secure him from the grasp of his savage pursuer.

Every one who reflects but for a moment on the relation which a large proportion of the great mass of human beings sustain to deep water, from the profound ocean down to the diminutive extent and depth of a mill pond or the little basin in a rivulet, and knows anything of the immense loss of life by drowning, will perceive that the ability to swim and calmly rest upon the water is a desideratum of incalculable moment. A small part only of mankind have ever learned to sustain themselves upon an element on which they are so often exposed, and which daily and hourly over all its vast expansion into navigable ways, they more and more numerously and thickly throng; nor have all who, to some extent, have acquired the art of swimming, that confidence in the integrity of the water, and that degree of self-possession which must ever be essential to the comfort and safety of all who, by any means, are induced to adventure, or are cast upon its bosom. Finding himself in the water without auxiliary support, the inexperienced adventurer thinks first perturbedly of its depth; he cannot readily seize on any floating material, and he forgets, or never thought seriously of the strong sustaining power of the element in which he is immerged, and which at that moment is actually buoying him up, and would, were he deeply immersed, in all probability, faith-

ful to an unchangeable law, bring him quickly to its surface; no, though it closely embraces him on every side, he has no confidence, for he feels it displaced by every motion, and yielding, apparently, to his entire bulk; terrified, he struggles impulsively with every muscle, looks despairingly to the shore if it be distant, and around him with unspeakable anxiety, and in the hurry and tumult of his thoughts thronged with painful images, he thrusts his arms above his head as if to lay hold on the air, and sinks himself down by their superincumbent weight. He has never known, or in the midst of terror and consternation, he cannot consider that his body is specifically lighter than water, or that even if it were not, a mere gentle motion of the hands and arms directed in a proper manner, and with so great moderation as scarcely to tire, would fully enable him to keep his mouth and nostrils above its surface and preserve him safely for successive hours. Truly it requires no more than a very feeble action of the right kind, and patiently continued, if at the same time the mind be composed and confiding, to keep any person from sinking even in water of the greatest levity. If he desire only to keep afloat, without trying to progress, it will be sufficient to employ his upper limbs in an easy, paddling motion, never bringing them quite to the surface, and taking care to flex his arms a little, and cut the water by turning the hands edgewise as they obliquely ascend along in front of the body to be swept with the palms prone and the fingers in contact, forward and outward and forcibly downward, to be again raised and carried around downward as before. Even a much slighter action than this would be adequate to keep comfortably any one's head above water, if he had no incumbrance to contend with, as his pockets filled with metallic money or other ponderous article to bear him down. There is reason to believe that the cause of the drowning of an unfortunate foreigner in the harbor of Erie, some years ago, was the presence of a large amount of gold coin contained principally in a girdle encircling his waist, and notwithstanding which, he kept for some time above water, but sank ere assistance could be obtained. The fact that if we dive even deeply into the water, we find ourselves soon rapidly ascending to the surface, shows the living body to be naturally buoyant; so, if we lie down quietly on our back, though it be on the bosom of a strong current, we rest as on the softest bed, and float uninterruptedly along till a ripple or a wave warns us to close the avenues to the lungs, and perhaps, turn over with our face toward the water. How often have we seen adults and very children run along an elevated platform and leap down from its extremity some fifteen feet into deep water, feet foremost, their arms by their sides, and their whole form erect as a column, rise resilient from the depth, with a force that brought their entire heads and necks and shoulders above its surface.

A very important point to be observed in floating and swimming, is so to manage the respiration as never to suffer the lungs to be entirely exhausted of air, and in general, whilst the chest is made freely and largely to expand at each inspiration, the air should be a moment or two retained, and somewhat slowly expired; by this means the trunk is enlarged and in the like proportion its specific gravity diminished.

A striking instance of development of the natant faculty was related to me while on my way to New York several years ago, as having occurred in the person of a little boy who, while descending the Hudson in company with his mother, fell in the course of the evening from some part of the vessel into the river, and for a short time was not missed. To describe the anguish of the parent, when after a faithful search of every part of the boat the fact was ascertained, need not be attempted. It was night, and the little sufferer, far distant in the rear of the rapid steamer, was believed to be sunk and irrecoverably lost. With the return of morning the vessel reached New York, and the deeply sorrowing parent went to her home not doubting that her child was lifeless, and deep buried in the waters of the river. But all her sorrow was in a few hours to cease; the little boy was brought to her in the course of the day, safe and sound; he had floated all night upon the water, and in the morning was discovered and taken up by a passing vessel and brought immediately to the city. His account of the transaction was this: As he fell into the river, his first thoughts were, he said, that to be safe he must be quiet, avoiding all unnecessary action and perturbation, as calculated to exhaust the strength and increase the danger; all of which was suggested to his mind by

the recollection at that perilous moment of what he had formerly been told; and summoning to his aid all the courage and fortitude he could command, he decided upon the single object of keeping himself afloat until morning, in the hope that then, as actually occurred, he would be seen and picked up.

In this remarkable instance of preservation we perceive what, under Providence, were the principal means; the strong confidence of the boy in his ability to remain long on the surface of the water, produced by the conversation to which we have referred, and confirmed and continued by his own sensible experience of the fact, with admirable fortitude and endurance. Had the darkness, the loneliness, the extent of water, and its yawning depth, been regarded with overpowering terror, how soon and how surely might a few fruitless and ill-directed struggles have produced a fatal strangulation?

Enough has been said, I hope, to make it plain that any person who will not suffer himself to be very greatly discomposed can keep afloat at the surface of the water until, under all ordinary circumstances, relief can be obtained. Thus far, and an invaluable attainment would be made; the many thousands who are annually cast upon the water, and who sink before boats or other means of safety can be provided, would be preserved to gladden the hearts of their friends, and to number to themselves years of enjoyment and usefulness. It may be objected that the art of swimming, since the common life-preserver and the various other buoyant India-rubber forms contrived for the same purpose have been introduced, is less necessary than formerly, or next to useless. There might be some force in such an objection, if people, when they are likely to be exposed on the water, would always be careful to take with them one of these articles, and apply it on the approach of danger; but it is well known what a strange backwardness there is to do this, even in those who would expect to sink the moment they should touch the water. This disregard of so sure a means of preserving the body above water is unwise and wrong in the experienced swimmer; what, then, is it in the person who believes that, unassisted, he could not keep afloat during the shortest portion of time!

Therefore, it is most evident that mankind require to be admonished, and that an earnest appeal to their understanding now and then be made, with a thrust at their moral sensibility. All these might awaken a general feeling of interest in the subject, and fill our innumerable vessels and the pockets of travelers with defences against the dangers of the deep.

After all, we are too well acquainted, we think, with the character of man, and the nature of those impulses by which for the most part he is governed, to believe that any means for preserving the life of persons incidentally cast upon the water, except such as have their existence, like the knowledge of the mechanic arts, in the individual himself, are ever to be universally or even generally adopted. Means that are merely extrinsic, however well adapted to accomplish the object intended, will appear to be onerous, and the continuation of their use as a sort of voluntary slavery. Whereas, a knowledge of the art of swimming, especially if acquired in early life, unites itself with the very being, and becomes an essential part of its nature, an integer in the sum of the constitution, that will admit of no separation. Always present, it is ready to afford protection on the approach of danger, and however sudden and unexpected the emergency, its possessor will ever find it at hand.

Hitherto our attention has been chiefly directed to the natural buoyancy of the living body, and the necessity and practicability of duly preserving in all cases of difficulty and danger a supernatant state. And we take a high degree of pleasure in the belief that every human being of ordinary form, whose powers have been even but partially improved, is able, in a condition of tolerable composure, to remain for hours at the surface of the water, if it be tranquil, or but slightly ruffled.

In thus calling attention to the subject of self-sustentation upon the water, and ardently pressing its importance, I have not in the least lost sight of the solemn duty resting on the entire community, but with heavier responsibility on the masters and owners of passenger vessels, to provide for and encourage the use of some or all of those exterior instruments and contrivances so often found effectual in preserving life amidst the perils of the deep; but it is hardly necessary to repeat the fact that these all have been and still are very partial in their operation, having saved only a few, a small

proportion of the vast number which have been exposed, from a fatal submersion.

Planks, empty casks and boxes, fragments of wrecks, spars, cotton bales, and boats, have saved thousands who else must have perished; but the millions — where are they?—the millions thrown by some contingency into the water without these friendly aids, and who, too, had never learned to swim? Yes, and all this frightful ruin, when ages ago the soldiers of Cæsar crossed, with bladders under their arms, the rivers of Spain; when the hardy seamen of the Baltic, clothed with an inflated sheepskin vest, buffeted the billows, and lay unperturbed on that stormy sea; when years of reflection have given time for vast improvements, among which are a variety of gum-elastic fabrics, beds, bags, etc., to serve as life-preservers in the water.

But, to resume, believing as I do that the faculty of swimming was given by the Creator to mankind, in common with the inferior animals, for good and useful purposes, I am naturally led to the conclusion that He intended this faculty should be developed, not only in a few individuals of our species, but in all, in every one of the race. This may be argued from the universality of the faculty in brute animals, and the impulses which lead them to its exercise, without previous training, in the moment of necessity. Instinctively they lie upon the water, and throw abroad their limbs in the most natural manner to accomplish their object, whether that be to attain to an adjacent shore, or the indulgence of a native propensity for being in the water, and moving themselves at pleasure. There being a few animals that from their very nature and form are unadapted, and have a dislike to the water, and therefore, if practicable, always avoid it, is no barrier against the general argument, and stands only as a seeming exception; for these creatures, as the hen, the cat, and others, and particularly many of the insect tribes, though they are averse to going into the water, lie safely for a time, and readily make exertions to get off it, or obtain a place of safety, their ill-suited superfices occasioning at once some embarrassment, and unless seasonable efforts are made to escape, would contribute to involve them in destruction; but these, I said, were exceptions rather imaginary than real.

Every creature, then, or almost every creature, has the faculty of floating or swimming, for a time at least, on the water. The development of this faculty in the irrational creature is understood to be instinctive, and therefore neither requires nor admits of any considerable degree of regular training; they inherit it as they do other instincts, and owe but little to instruction. Not so with man, if we except the short period of infancy anterior to the dawn of reason; the human being, though able at once, perhaps, to rest on the water, and move forward clumsily, cannot expect to arrive at a degree of excellence, and become an expert swimmer, without suitable instruction or a somewhat prolonged experience; and however proper and whatever may be the amount of the former, the latter is, for several reasons, essentially necessary. The well-instructed but inexperienced learner may not lie altogether easy, nor feel so full a measure of confidence and composure in relation to the sustaining power of the water, as is always desirable, nor will the limbs be moved with the agility, strength, or grace that, without much fatigue, will insure a fleet, uniform, and continued progress. Nothing short of the tact and confidence gained by long experience could have nerved Lord Byron to encounter the Hellespont, and swim entirely across to the opposite shore.

A similar confidence has sustained the expert swimmer in all ages and countries. Several years since, an adventurous young man swam twice across the Niagara river, without resting upon anything except the water. The place of crossing was just below the cataract. Not long ago, a thrilling incident was published in the papers, relating to the courageous procedure of a young lady who, learning that in a paroxysm of insanity a man had thrown his two young children into the sea and jumped in after them, without being able to swim, sprang from the deck of the vessel, and, seizing both children, kept them above water until assistance was afforded; the man also being saved by seasonable interposition.

Everybody is acquainted with the natant character of the Sandwich Islanders, and would hardly be surprised at any enterprise they might perform upon the water; one, however, which I will introduce here from memory, is not a little remarkable. Some years ago a vessel, having on board a number of these people who had recently been converted to Christianity, was by some

means suddenly disabled, being at a distance of several miles from land, when they were all at once cast upon the broad bosom of the deep. In this forlorn situation, around them the wide ocean, their homes distant—perhaps situated on several different islands, and scarcely within their sensible horizon—they saw no prospect of escaping from their perilous position but by swimming; and drawing near together, men and women, they all engaged in a social, solemn act of Divine worship, commending each other to God and imploring His protection and aid for their safe return to their respective homes. Among the interesting group, now to separate, were a man and his wife, the latter taking with her a bucket, lest in the voyage her declining strength should require some extrinsic support. Having shaped their course, the waters, buoying up their bodies, parted before them at every stroke of their well-practiced limbs, and side by side they had measured, without compass, many long miles of the trackless waste, when the husband, showing signs of sickness or fatigue, received the bucket from the hand of his companion, and thus aided he held on for a time, and hope cheered them with a renewed prospect of success; but clouds lingered in the sky, and a deeper gloom was preparing to settle down upon the devoted pair. Nature was evidently yielding to the strong demand made upon its vitality, and chord after chord slackened in the contest, till the bucket was no longer adequate to the support of the fainting man, and the last resort—a hold upon the long tresses of the unflinching woman—after a few more rods had with unspeakable anxiety been gained, was despairingly relinquished, and the dying husband was no more; his spirit had fled, and the deep-stricken, sorrowing widow was left alone, yet far out from the shore, to take a last look at the pale form of her beloved, and leave it to sink to its ocean grave, while she made the best of her way towards the island, suffering, doubtless, by this time, from fatigue and hunger, and without further interruption, in due time landed safely on its shore.

To multiply instances of this kind to illustrate the extent and character of the natant faculty, and the practicability of its development and vast utility, would not be in the least unpleasant to me; but when we think of the ease with which they may be looked up in books and papers, if not already stored away in the memory, I might forbear, and proceed to the consideration of the closing paragraphs. I stop, however, a moment, to remark that, as some persons may think the subject in no danger of being exhausted, and that the chief object of this paper—the awakening of a general attention to the great importance and practicability of rendering the cultivation of the art of swimming universal—should be pressed upon the community by illustrative cases, as the most promising method of success, I will venture to add that the practice of divers for sponge, coral, and other productions of the class zoophytes, in all those seas where they abound, and the universal prevalence of the practice of swimming among the islanders of the Pacific, is becoming more and more a theme of thought and conversation; writings on the subject are accessible, and no one who has heard of it would be likely to forget the feat of two of these islanders, converts to Christianity, in exploring, by the help of a rope, a ship's bottom, to ascertain the condition of her copper; nor the adventure of him who, being attacked by a shark, first fled from him, and afterwards, better prepared, sprang into the sea and commenced an offensive battle, with no better defence than several plies of a strong, tough tegument about his arms, and no weapon but his hands, endeavoring at one time, by thrusting his hand into his mouth to tear out his tongue, and at another to direct him out of his depth upon the strand, by seizing him by the tail, and so dextrously managing it amidst its strong and slippery vibrations as to keep his head toward the shore.

In the forepart of my Essay a cursory view was taken of the action of several sorts of animals in the water, intending thereby to illustrate with greater clearness and precision the true relative position sustained by man with the inferior creatures, in comparison of their natant powers. This has, then, already been seen in the course of this discussion, but it must be more fully and distinctly considered in the sequel. One of the chief reasons why brute animals are much less often drowned than the human species is the absence of that strong consciousness of danger which the former, from their very constitution, are not capacitated to receive. The brute may be filled with terror, but experience shows it is impulsive;

it has little of reflection, and nothing to do with the future; it is the present wholly which gives him trouble; if he is crossing a river, his attention is somewhat attracted by the opposite shore, not to awaken a sense of pain, but of pleasure; he feels, if he has been long in the exercise, discomfort from weariness, and anxiously pulls for the land where he expects to have rest. He knows nothing of the fearful depth beneath him, and cares as little as he knows; if he cannot by extending them touch his feet upon the bottom, it is all the same whether it be a foot or fathom. He has no friends to think of leaving, no work to remain undone, no sins to repent of. All his painful sensations seem evidently to arise from his unnatural situation, being off his feet, and on an element to which he is not used, or only in a limited degree.

Man, on the contrary, even at a very tender age, is thronged, when in danger, with reflections and fearful forebodings. The little girl or boy of seven or nine years old, and having common capacities, is probably not to be found, who, on being cast upon the water, would not think of its deepness, the danger of sinking, drowning, dying, and what his or her parents, brothers, sisters might think, feel, or say; and not knowing how to sustain the body by appropriate motions of the limbs, would suffer it to go down, by raising the hands above the head, or some other improper movement, causing water to rush to the throat, spasmodically closing the glottis, and beginning the fatal process of strangulation. These or other painful trains of thought being irregular, hurried, and interrupted, suspend the operations of reason and judgment, even in the adult; and so the very powers by all of which man is rendered superior to the brute, and which should direct him with greater certainty to the means of safety, are subverted into a wild chaos of mind, and become engines of destruction. From these considerations then, the inference seems fair that in the lower animals safety is promoted by a general absence of all real apprehension of peril, whilst it is diminished in the human being as the sense of peril is increased, and the intellect confused and distracted. I have said that one of the chief reasons, *cæteris paribus*, why brute animals are much more seldom drowned than man, is an absence of a strong consciousness of danger. This reason, however, can properly apply only to persons who have passed the period of infancy, and through fear are rendered incapable of determining what sort of action will keep them afloat, and carry them forward on the water. Yet it must be remembered that infants, whilst they cannot exercise reason, have a very inferior instinct to brute animals, even in the incipiency of their existence, and, therefore, under equal circumstances of danger in other respects, they would have, viz., the young of brute animals, almost the entire advantage, the infant child being almost sure to strangle as soon as the first ripple had dashed over its face. Here is an amusing account from the earlier memoirs of an old friend. Mr. James Samson, an Englishman, with whom I have long been acquainted, and in whose word I have entire confidence, relates an incident of his early childhood thus. He was taken to the bank of a river by some young men, and set down upon the ground while they undressed and went into the water to bathe and swim. For a short time he remained quiet, but very attentive to what was going on; pleased with the exercises and play of the young men, and under the influence of a strong desire to imitate the swimmers, he stripped off his clothes, and in a moment sprang from the edge of the bank into the river which was slightly depressed below the shore, deep and perfectly quiet. He was full of glee, and without the least embarrassment swam like a duck. The young men were surprised, and fearing that he might drown, caught and bore him to the shore, and spanked him for his presumptuous adventure; but they had scarcely more than returned to their pastime, when the little fellow jumped again into the river, and swam as before; and this time he was allowed to remain in the water until he was satisfied to come out along with his friends.

Dr. William Johns, of Erie, Pa., my intimate friend, once took a little son of his to the lake on which this place is situated, and wading into it to where the water had considerable depth, threw him to a distance off upon it, and stooping, stood in an inviting attitude, while his little boy swam without difficulty to his outstretched arms. This latter account, though not so striking as that of young Samson, is a good illustration of the natant faculty in the young child.

Another reason why, *cæteris paribus*, some of the irrational animals are safer in

the water than man, is that their structure and form being fitted for a higher position, one of less immersion, enable them to keep their mouth and nostrils, perhaps their whole head, at a more considerable and convenient elevation; such are the deer, and other animals of the same genus, and those in general which have large, full chests, and slender limbs; not to speak of the numerous aquatic birds, whose every part the Creator has admirably adapted to the element on which they love to sail, and on which they are equally as safe as on the land. The peculiarities in the figure and construction of these birds are very remarkable, and exhibit the nicest adaptation imaginable to their manner of life, the osseous portion of their bodies being comparatively light and hollow, and the whole of the framework open and slender, with great capacity, but a slighter filling up than in land animals; all which, with dorsal pulmonary spaces and large exsanguine pectoral muscles, fit them for both swimming and flying.

Having freely assigned to the inferior animals all those advantages which they naturally possess, as connected with the water, and which we have seen are so complete and ample that in ordinary circumstances strangulation is rare, we turn again to man, that we may in a more extended view contemplate his superiority in the amplitude of the natant power so kindly bestowed by our Creator, and demanding our grateful thanks, and which power, as a sacred duty to Him, we are bound, we believe, to develop and improve.

The very thing, we have said, which, misused, diminishes our safety on the water, very greatly promotes it when properly employed. It is the understanding which gives this superiority to man. If rightly used, it will keep him out of danger, or it will come to his aid, and in the midst of peril, secure his safety. During the calm exercise of the understanding, if he be cast into deep water, he will consider what is the best method to be pursued; whether to remain quietly afloat until assistance can reach him, or swim for some object that will sustain him for the present, or directly for the shore; he will not waste his strength in useless exertions and perish with exhaustion; he will swim as he can bear it, and make every stroke of his limbs tell on the distance, and if this be great, he will not refuse to receive support from any buoyant object he may command, and to relieve himself of fatigue, if but only a beginner in the art, he will change his mode of action, sometimes operating on his back, at others on his side; he will swim head foremost or feet foremost, or he may choose to lie still for a while, and these changes he may repeat at pleasure.

In all these respects man has an advantage over the inferior animals, all of which, as far as we know, have but one mode of action in swimming. Thus, we infer, if the mind be calm and unperturbed, man or woman, in all ordinary circumstances, has the power to preserve his or her life upon the water independent of any auxiliary support. It has been objected that, to render the art of swimming universal or even to bring it within the possession of but a majority of mankind, must be attended with extreme difficulty. That some difficulty might arise from the great aversion of some and the indolent indifference of others, we have no doubt. There are those, certainly, who would plead that there is danger in learning the art, not a few being drowned in the process, and more, perhaps, afterwards. We are aware of the force of these objections, and yet do not hesitate to believe that, like the spectres of early dawn, they are to be dissipated by the first clear rays of full risen light. Especially may it appear difficult and hazardous to teach infants and young children this adventurous art; that during the apprenticeship, through the mismanagement of nurses or other incompetent instructors, and afterwards from carelessness, presumption, or other incidental circumstances occurring as a natural consequence of the very power and ability to swim, drowning would be frequent. This does not necessarily follow as a result of the art; that even good swimmers are sometimes rash and venturesome is certainly true, and in consequence of indulging such a spirit, have got themselves into difficulty and been drowned, when, if ignorant of the art, they would have stayed on terra firma and been safe. And, melancholy to think, instances are not wanting in which the practiced swimmer has perished in his exertions to rescue those who could not swim; he has been embarrassed, entangled, and in full strength carried down, or having saved the helpless and dependent, has at length himself sunk down from weariness and exhaus-

tion. Objections to the general introduction of this art, as if it were of difficult attainment, are anticipated as likely to come from the indolent and the indifferent, and persons unaware of the positive aptitude to its acquirement. And how often the first aspiration, the slightest expression of a wish has been instantly rebuked, if not extinguished, by "keep away from the water, or you will be drowned, my dear," from the lips of an affectionate but mistaken parent. Lastly, that it may linger long in the memory, we would call attention to some of the objections that have operated so effectually and so fatally in respect to the fairer portion of our race. Women, with few exceptions, are, in a civilized community, unacquainted with the art of swimming, so that if thrown upon deep water by any means whatever, they have little or no hope of being rescued from the perils of their situation excepting by the hand of some person who, having previously learned how to swim, is able to support both himself and another.

This is a great evil, and many perish annually on account of its too general prevalence. A dream of inability has kept up the illusion, and little girls have been allowed to grow up to womanhood without the most remote expectation of being able, unassisted, to support their heads above water for a single moment. They have never been instructed, and their first thought is that they must sink inevitably if left to themselves, and as a matter of course, they do. Now all this is sad, and yet more so when we consider how often they carry with them to the bottom those who, had they attended only to themselves, would have safely escaped. On this state of things we look with no little concern, yet we cannot hope for much improvement so long as the objections arising from a perverted taste and from wrong views of what is decent and becoming in the sex continue to be urged as seriously, and as pertinaciously adhered to, as if it were really sinful for women to swim. So it is that by universal consent women are so generally helpless in the water.

Every reflecting person must sincerely regret this state of things, and condemn a conceit so destructive of life, and that cruelly denies to the young female an acquisition which, in common with the other sex, her impulses lead her to desire.

We will now endeavor to answer in consecutive order the objections which have been presented, and we cannot but hope that, like as the delusive shadows of twilight flee on the rising of the sun, the whole will vanish at the approach of reason.

It is conceived that to render the practice of swimming general, those persons already convinced of its utility should, by every accessible means, communicate their knowledge to others; and it would seem proper that the first efforts should without delay commence with the members of the Medical Profession, and under their safe and enlightened influence be diffused abroad on every hand, informing the ignorant and arousing the indolent and indifferent. Especially should it be recommended by all the members of the profession to the parents of all children within the district or circle of their practice, to commence with a course of discipline such as the Medical Societies might adopt as most eligible, at as early a period as possible, at least with all infants before the expiration of the first five years of their existence. The first attempts may be made under the agency of the parents or a careful and sensible nurse, in a large tub, trough, vat or tank, and any of these may be exchanged for a little pond, or basin in a brook. All danger of strangulation, and even the slightest inconvenience and discomfort, may most readily be prevented by the care and attention of the person having charge. In respect to larger children and adults, who would require more extended and deeper water, they should not be allowed to venture into it alone, or only in company with other children or inexperienced persons, but should invariably be attended by one good swimmer, who should feel responsible, and should possess the entire control of the pupils. Still further to insure the safety of learners, buoyant bodies that could easily be clung to, and long, slender poles, as the common reed, should be at hand; and the common life-preserver is a most proper attendant. In answering the objection that good swimmers are sometimes presumptuous, venture improperly, and over-tax their powers till they fall a sacrifice to their indiscretion, we maintain that such conduct is not necessary, and therefore should not be introduced as any disparagement to the art. Exhortation, warning, persuasion or advice, may effectually cure the evil. That it is difficult to swim, is entirely a mistake. In children particularly, the aptitude to learn is great

and striking, and few, perhaps, who live convenient to a river, a lake, or the sea, would remain ignorant of the art till the period of adolescence if not restrained and prevented by the false and mistaken kindness of friends; and in the case of adults who cannot swim, we feel well assured that under proper tuition there are scarcely any persons of either sex, even though they may have reached their seventieth year, having no serious adverse peculiarity about them, who could not be taught to float and to move regularly forward on the water in less than half a dozen trials of a quarter of an hour each, with the prospect of improvement according to the pains they might thereafter bestow upon themselves.

This may appear strange and incredible at first thought, yet if we will but look at the fact that the specific gravity of the human being in a living state is somewhat less than that of water, and that progression and at the same time a fuller sustentation is effected by an easy paddling action, the truth will—in theory at least—be manifested.

The objections which have been suffered to lie against the acquirement of the art by women are, as we have said, in bad taste, and originate in wrong views of what is really proper and becoming in their sex. How, we ask, can anything which it is positively useful, and, as we consider it, necessary for a person to know and practice, be indecorous? If learning to swim may sometime or other be the direct or indirect means of preserving her own or another's life, how could a woman fully believing this neglect to learn, yet have an approving conscience? If it be decent to have such a respect for cleanliness of person as to lead her to the bath, or to wash the whole body in clean water, who would say it were more decent never to bathe. Frequent and general bathing is conducive both to health and comfort, and in a civilized state of society can scarcely be comfortably or safely neglected, either in summer or winter. To secure to females every necessary opportunity and facility for learning and for practicing the art of swimming it is only requisite that some conventional rules should be adopted (to which the other sex would undoubtedly most readily assent), and places appropriate, and suitable times and conveniences for the purpose would soon sufficiently abound. We speak, t will be perceived, of females that have passed the period of infancy; for anterior to that period no difficulty could exist, and it is in that early season that the opportunity should be provided, and the proper efforts made for development and incipient improvement of the natant faculty; at this period, instinct will operate and assist in fixing the whole more deeply in the constitution. And at this tender age, too, the advantages of a greater convenience conspires to fix the best period for commencing the work.

Having, as we think, disposed of objections, and opened the way to a more correct appreciation of our subject, we feel no small degree of pleasure whilst we proceed, in conclusion, modestly to express our belief that all persons, as far as practicable, should learn how to float and swim calmly upon the water; that by far the best period of life for the acquirement of this power is infancy; but that no person who may be desirous of its attainment need be discouraged on account of age. We repeat that it is neither necessary nor useful to expose the child to peril while it is learning, either by leaving it unprotected, or by taking it into deep or rapid water. Nor would we recommend that promiscuous groups of little children, as is sometimes the case now, should be suffered to rush into the water by themselves alone, and as caprice may impel them, but only under the control and guidance of a competent instructor.

In general the child should be instructed at home, and learn its first lessons from its parents or nurse, or other person, in the domestic circle; and it will often happen, as we have said, that a large tub, a tank, or a little pond made by damming up a brook, will constitute the first place of trial, and nothing better could be desired, if only it be deep enough to immerse the child to its neck. It seems very desirable that the mind in after years should never be able to revert to the period when the little being was ignorant of the art. To produce this oblivion the work must be commenced, at least, before the fourth or fifth year, and the child well familiarized to the water in an extended form, as a large pond or river; thus having no remembrance of the time when he could not swim, it seems fair to conclude that he would suffer little or nothing from the fear and perturbation of mind that seize and operate so fatally on the inexperienced, and sometimes

on the initiated. On many occasions it would be greatly convenient and proper to put on a swimming dress similar to that worn of late years by sea-bathers, when both sexes mingle freely in the recreation and pastime of wading, plunging, and swimming, and all with the strictest regard to modesty and decorum. It is well to mention the effect of a little oil of some kind rubbed over the skin in preventing the insinuation of water by the pores, the rapid escape of vital heat, and that general thickening and corrugation of the cuticle, common after long-continued immersion, wholly suspending the function of perspiration, and not unfrequently inducing some degree of fever or other indisposition.

Finally, believing that but few men are aware of the fact that after persons have strangled and sunk to the bottom, and lie quiet there, they are able to see around them, and sometimes, if not usually, retain their senses, and could they command sufficient strength and resolution, might give some token by which a search for them would be more immediately successful, or they might extricate themselves, peradventure, by using the power that, under such circumstances, may still linger in the locomotive muscles, we will relate an incident in illustration of this point:—

More than fifty years ago, Col. Nial Nye, then a lad, went into the Muskingum River, in the state of Ohio, to bathe. No one accompanied him, but an elder brother was at work in a field within the reach of his voice. The inclination of the river's bottom was such that, at no great distance from the shore, the depth of water exceeded his own height. Ere long, some embarrassment occurring, Nye sunk to the bottom and arose to the surface alternately, until on the third submersion he lay still and quiet upon the bed of the stream, perfectly sensible, but despairing of relief, inasmuch as he was aware that he had suffered the fatal third descent. However, he was not then to perish. Suddenly, a thought sprang up in his mind that it was unwise to lie there and die, when the shore was so near, and instantly rallying every particle of his fast failing energy, he threw himself over upon his hands and knees, and crawled to the edge of the river, where raising his head above the surface, he for the first time became unconscious, and dropping his face into a few inches' depth of water would after all have drowned, had not his brother, who had heard his cries, hurried to the spot, and arrived just in time to reclaim him from the destructive element; after which a few minutes only sufficed to bring back his senses. Of the truth of this statement I am well assured, having been long and intimately acquainted with Col. Nye as a gentleman of the strictest probity, and having received the same from his own lips.

Considering this entire subject, it appears to us very manifest that in almost all ordinary cases a person who has received a knowledge of only the first principles of the art, as, viz., that the human body is specifically a little lighter than water, and that the most natural paddling motion of the limbs will both raise it higher and carry it forward, enabling the swimmer freely to respire the air, may and can, if such a person be able to exercise reason, preserve him from drowning. Extraordinary cases will occur, however, and such are a low and freezing temperature of the water, impeding the circulation and chilling the whole body, inducing spasms or inflexibility of the limbs; such also are impracticable distance, and insuperable weariness and exhaustion from long-continued and overtaxing labor.

As a hygienous measure, too much cannot be said in favor of swimming. It gives exercise to every muscle of the body in general, without undue fatigue, promoting digestion and assimilation, exhilarating the spirits, and causing the decernent and excernent systems to act in a salutary and efficient manner for the promotion of health; and there is no species of exercise which tends more certainly to the development of the entire muscular structure. If children and youth were more constantly to engage in the exercise of swimming, there would, in all probability, be fewer instances of contracted thorax, and less of pulmonary obstruction, and the dreaded and fatal phthisis. The muscles, expanding in volume and increasing in energy, would solicit an expansion of the osseous framework, increasing the capacity of the pulmonary arches, and inviting into the lungs at each inspiration a fuller and freer draught of air. This would supply the blood with an abundance of the vivifying material for carrying on a more perfect animalization, resulting in a general freedom from all visceral disorder and nervous irregularities, and thus securing a high state of health and comfort.

In saying that the exercise of swimming is promotive of muscular development, and, through this, of a more perfect animalization, it will be perceived that we do little more than to place it in the list of gymnastic exercises, though it is evidently at the head of these, and has the additional merit of associating with it the bath, than which there is no single means more powerfully hygienic, and at the same time more agreeable. We feel happy in addressing, as we fully believe we do, the good sense of our medical brethren, who, from their knowledge of the philosophy of man, can best appreciate our subject, especially in its hygienic aspect, and who, if the art of swimming is ever to be universally practiced, will be found, we trust, to have been its chief promoters and patrons.

Omitting to insert in its proper place the following paragraph, I will, as an important item, put it here at the close of the essay:—

Let any one who doubts the sustaining power of water be led into it until he is immersed in it to the chin, and he will find that he is unable to stand steadily upon the ground at the bottom, and scarcely more than touch it with his feet; and if his guide were now to desert him, he would have to fall down on the water for support. This is a convincing proof of the truth of the principle everywhere contended for in this paper, and, perhaps, ought to constitute the first lesson to be learned by the uninitiated reflecting mind.

ORIGINAL OBSERVATIONS AND EXPERIMENTS WITH HYDRATE OF CHLORAL.

By Laurence Turnbull, M. D.,
Of Philadelphia.

(*Concluded from No.* 808.)

Experiment Thirteenth.—Frank N., aged 21 years, of strumous tubercular habit, laboring under an attack of congestion of the lungs, with the pleura involved, pain very intense, respiration hurried, temperature 104, pulse 120; directed a blister and fifty grains (gr. l) of hydrate of chloral in two doses. His mother, in her desire to relieve him, gave it at one dose. The effect was good, and his sleep profound; skin so cool and clammy that she became alarmed and woke him suddenly; yet, when he was thus awakened he was not confused, was able to answer all questions directed to him, and was entirely free from pain, with free expectoration, and breathing much relieved.

Experiment Fourteenth.—It is a most valuable agent in severe affections of the nervous system.

The mother of the above lad, aged 45, had a most severe shock to her nervous system, owing to the sudden and terrible loss of two of her boys, aged respectively 10 and 11 years, by drowning, which was followed, in her case, by nervous fever, with delirium and insomnia, and unwillingness to take a particle of food for twenty-four hours. By prescribing and administering equal parts of syrup of chloral (ʒj.) and fluid extract of valerian, with beef essence as food, she finally obtained sleep and recovered her reason, and was ultimately restored to good health. This will partially account for the large dose she gave her son, having such faith in it herself. But in all diseases of the heart and lungs great care must be employed to commence with small doses, or to combine the chloral with a small quantity of morphine, or tincture of Indian hemp.

Experiment Fourteenth.—Miss J. W., aged 18, with ophthalmitis and destruction of the eye, with pain and distress, was relieved by three thirty-grain doses of hydrate of chloral, and was able to sleep.

J. W., aged 52, father of the above, had his right eye penetrated by a percussion cap, July 4, 1871, and had been under the care of a homœopathic physician for treatment before coming to the hospital. He was pale, nervous, and in great agony, with entire loss of vision. The eye was removed, and thirty-grain doses of hydrate of chloral kept him free from pain. The only other means employed was the use of the ice-bag. It is very useful in some forms of eye diseases of a strumous or neuralgic character, associated with quiniæ sulphas, but not in other forms.

Experiment Fifteenth.—Heat—Toxæmia, Thermic Fever.—G. C., aged 22, male, a resident of Mexico, while on a visit to Darby, July 18, 1871, had to walk a mile and a half in the broiling sun; was overcome, and obliged to retire to the shade, and was unable to proceed. Since which time he has had constant pain in the head, with heat of skin and insomnia almost complete. Reasoning on the former experiments of the cooling influence of chloral, and its effects upon the nervous system, I ordered him ten-grain doses every three hours, in water, with ice to his head. After using it six

hours he was able to sleep four hours; arose and took some nourishment; he was free from pain in his head, and his skin reduced to 90. Took the chloral again at 11 P. M., and had a good, quiet sleep until 7 A. M.

In some few instances the chloral will disturb and distress the stomach, say in about three per cent. of the cases, but if incorporated with a portion of mucilage it is rapidly absorbed. If given by the rectum, at the rate of double the quantity required by the mouth, it will in some instances produce swelling of the eyelids, and even cause intoxication and dimness of vision.

In cases of chorea, epilepsy, and convulsions, arising from irritated nervous or reflex spinal irritation, it can be given with advantage alone, or in combination with the bromide of potassium or tincture of hyoscyamus. In acute mania, simple or puerperal, it is more valuable than Indian hemp, or bromide of potassium, or morphia, as numerous cases have demonstrated.

Experiment Sixteenth. — Case of acute mania treated by cold, sedatives, morphia, etc., without inducing sleep, accomplished by the use of hydrate of chloral. Mrs. Letitia B., aged 49. Sept. 13, 1871. Has been suffering with acute mania for ten days, without any known cause except distress in regard to her rent. When I visited her she was in bed, with a wild expression, pupils dilated; her hands were tied to prevent her from destroying everything she could get hold of; talk incoherent and rambling; refused all food, which had to be administered by force; had not slept, except a few hours, for ten days. After trying morphiæ sulphas hypodermically, to the extent of one grain, other agents having been employed previously to my seeing her, hydrate of chloral in ten-grain doses was administered every three hours. She slept the first night for three hours after using thirty grains. She continued its use on the 15th, 16th, 17th, 18th and 19th, sleeping longer each night, and on the morning of the 20th when she awoke she was rational, able to eat some soup, and desired to see her little girl. She also spoke to her sister, who before she would not look at. In corroboration of the above we cite the observations of Dr. A. Holler, attending physician of the Insane Retreat in Klosternenburg, and Dr. Campbell. Dr. Holler remarks:

1st Case. The hydrochloral, during a period of three and a half months, failed only twice to produce sleep; while, in forty-six days, the exhibition of morphine was followed nine times by a negative result.

2d Case. Catharine B., aged 47 years, suffered from religious melancholy; was greatly troubled night and day with *tinnitus aurium*, causing her to pass entire nights without sleep. The employment of scruple doses of hydrochloral produced several hours of uninterrupted sleep. In the course of time it became necessary to augment the dose to two scruples. Her pulse sank in the meantime to 66, and the quantity of urine (as had already been noticed in other cases) was increased. The disturbance of hearing diminished very decidedly.* Mr. Aldridge examined the eyes with the ophthalmoscope, of patients under the influence of chloral hydrate, and the deductions, if any might fairly be drawn from such a small number of instances, would be that the chloral hydrate increases the calibre of the arteries, and consequently the vascularity of the retina, until such times as the patient falls asleep, and that the anæmic appearances seen at the latter period are those which are said to be characteristic of healthy sleep. This fact was first observed by Dr. Hammond, and published in the New York *Medical Journal*, February, 1870, p. 469.

Dr. John A. Campbell† gives the following results of experiments at Garland Asylum, Carlisle:—

1. That both chloral and tincture of hyoscyamus are sure sedatives to maniacal excitement.

2. That of these two medicines chloral is the most certain sleep-producer.

3. That chloral acts more quickly than tincture of hyoscyamus.

4. That though bromide of potassium, in gr. xc. doses, is a sedative to maniacal excitement, and to a certain extent hypnotic, yet it is not a sufficiently powerful sedative to allay intense excitement, or an hypnotic to compel sleep where great insomnia exists.

5. That a two-drachm dose of tincture of hyoscyamus is not quite equivalent to thirty grains of chloral. Two and a half drachms would probably be as nearly an equivalent as could be given.

Experiment Seventeenth.—In two cases of

* The Journal of Psychological Medicine, April, 1872, pp. 371, 372 and 404.

† Journal of Mental Science, January, 1872. The Practitioner, April, 1872, pp. 255-6.

delirium tremens, one from excessive use of mixed drinks, and one after a severe injury, both instances were relieved, the first by thirty grains of hydrate of chloral, and in the second seventy-five grains were ordered, which gave the patient a quiet night, with no delirium, and the case did ultimately well.

A third case of the above disease was treated with equally good results, but its use had to be discontinued, owing to so copious a flow of tears obscuring the vision, etc.

Experiment Eighteenth.—Case of dysmenorrhœa relieved by hydrate of chloral. Miss C. G., aged 31, large frame and stout, has suffered with most distressing and painful menstruation for some time; the pain so severe as almost to produce convulsions; menstrual fluid coming in a gush and then retained. Administered thirty grain doses every three hours, with the most happy results of relieving the spasm, increasing the flow of the fluid and urine, and great relief to the pain. The writer has also used it in inflammation of the ovaries with equally good results.

Toxical effects on the human system:—This drug has been employed in hundreds of thousands of cases by medical men without producing but very few deaths, yet in the hands of persons not in the profession several deaths have followed its indiscriminate use, or rather abuse. According to Dr. B. W. Richardson, the maximum dose is ninety grains, and with one hundred and forty the sleep would be dangerous. Yet deaths have been reported from 60 to 100, or even 45 grains; but as stated before, not ordered by a medical man, except in one or two instances. In recent cases reported by Mr. B. Browning recovery took place after the use of one hundred grains, and as much has been used as seven pounds by one individual in increasing doses, without any very injurious results. See also two cases of death reported in Vol. XXVII, August 17, p. 160, of this journal; one after four days' use, and one after twelve days, quantity not stated.

Means to be employed in case of accidents in which a fatal dose of chloral has been administered:—First, apply warmth, and keep the air warm. Second, sustain the body by an abundance of food, especially milk, warm, with a little lime water, and stimulants, say half a pint every two or three hours, one or two ounces of brandy or whisky. Third, Keep up artificial respiration by a small double acting bellows or other means. It is useful to add to this, as in Mr. Browning's case, small doses of morphine by the hypodermic method.

Although it is a most useful agent in all convulsive diseases, it will not as a pain reliever always, nor could it, take the place of morphine. It has been found very valuable in causing sleep, and even curing cases of tetanus and trismus. There have been, up to June, 1871, thirty-six cases of tetanus treated by this agent and the galvanic current, in which there has been twenty-one recoveries and fifteen deaths. In one case the dose was sixty grains every half hour, and the patient took seven doses and recovered. It has been found useful in the paralysis of the insane, and yet in some instances it produces a partial paralysis of the organs of deglutition; also restlessness, and even coma.

It is antagonistic to the poisonous effects of Calabar bean and strychnia, and yet is given in combination with them.*

Dr. H. Griffin reports a successful case in 1872 by means of chloral, morphine and galvanism. M. Garnier refers to several cases in which chloral was used in the treatment of tetanus occurring in very young persons; two cases were cured. The writer finds another case of death from chloral, reported by Dr. W. H. Lathrop, occurring in the practice of another physician, in which 100 grains were given; after the last dose of 20 grains the two physicians left the house, when they were called back to find the patient dead. Prior to their leaving it is stated he complained of a slight paralysis in the right lower extremity, which no doubt extended to the heart. A post-mortem examination revealed nothing. This is like one or two fatal cases related by Dr. N. R. Smith, of Baltimore, in which when given in large doses (60 gr.), and where the system may have become charged with it, it overwhelms the powers of life, as is the case in some instances by the hypodermic use of morphine, aconite, strychnia, etc. According to Dr. Richardson's observations it should be given in repeated doses, at the rate of ten grains every two hours, or seven grains every hour; but the pulse, heart and skin should be carefully watched. Dr. Nathan R. Smith describes its effects upon the fingers, attended by desquamation

* See table by Dr. Joseph R. Beck, p. 299, in the St. Louis *Medical and Surgical Journal*, June, 1872.

of the cuticle and superficial ulceration; but so far as our observation goes, and that of many physicians, no such results followed its use, and his cases are exceptions which it will be well to remember as results which may be encountered.

Hydrate of chloral has been found to act beneficially in a number of cases of puerperal convulsions; and Dr. Liebreich is disposed to explain this by accepting Frerich's theory, that the convulsive attacks are connected with the transformations of urea into urate of ammonia, and by supposing that besides the production of chloroform there is a formation of hydrochloric acid, which neutralizes the ammonia. Among other diseases in which there has been a general agreement of opinion as to the beneficial effects of hydrate of chloral, Dr. Liebreich mentions senile nervous asthma, not noticed before in this paper, dental convulsions in children, sea-sickness, etc. The following are our conclusions, as drawn from our experiments, observations, and the most recent literature upon this interesting subject.

1. The action of chloral hydrate differs from that of chloroform.

2. That the action is the result of the conjoined use of chloroform and formic acids upon the blood.

3. A part of the chloroform formed by the action of the alkali of the blood is eliminated by the pulmonary mucous membrane; a part of the formic acid is eliminated by the urine as formiate of soda, as shown by experiments of "Byasson" (French Academy, June 12, 1871).

4. There are three degrees of the operation of chloral on animals and man, as shown by our own experiments.

The first degree is feebly soporific, and slightly nervous sedative action.

The second degree is an intense soporific action, with diminution of sensibility; at this period there is a deep sleep of variable duration, without apparent trouble of the principle functions of life.

The third degree, complete anæsthesia, with total loss of general sensibility and muscular power, cataleptic state. Death almost always follows this degree of action, as was seen in our experiments on animals.

5. Under the microscope the blood was seen moving, with some bright red, or dark red particles. According to "Ralph," starchy bodies are also met with in both urine and blood.

6. Death takes place last at the heart, which is kept in action long after all signs of death in the animal were present, as shown by removing the sternum, etc.

7. Sleep, with diminished heat of the surface one or two degrees below the natural standard.

8. Small doses do not produce anæsthetic results, these requiring from forty to fifty grains. In typhoid and typhus fevers one must commence and continue in small doses; five grains is the average quantity required.

9. It increases the flow of the menstrual fluid.

10. Seventy grains of the hydrate of chloral is equal to ½ grain of morphine employed hypodermically, and is not apt to cause so much disturbance of the stomach.

11. Gout and rheumatism must be treated with an excess of alkali, potassa or soda, to obtain the best results from its use.

12. Males require a larger dose than females.

13. It is very valuable in diseases of little children, but care must be exercised to commence with small doses, gr. j. for each month, and it should be mixed with nothing but water, as it is so apt to change, and become worthless in contact with organic matter.

14. Hydrate of choral will be found useful in phthisis, and even some forms of acute affections of the lungs, but not when the heart is involved.

15. It is a most valuable agent in nervous affections.

16. In affections of the eye it requires care to use it, as it is apt to cause swelling and redness and excessive flow of watery secretions with obscuration of vision.

17. In sunstroke or heat toxæmia it is a most valuable aid to produce sleep in that restless state after reaction produced by frictions of ice and ice-water to the head and body.

18. In tetanus it has been found a most pleasant agent in arresting the fearful paroxysms and giving the patient rest, and assisting materially to the cure, causing a relaxation of the affected muscles, and by counteracting the effects of the spasm.

19. In cases of impending death the means are to support the system by heat, food, and artificial respiration, with stimulation and small doses of strychnia.

20. It has been found a most valuable agent in acute mania and in the paralysis of

the insane, delirium tremens, dysmenorrhœa, and tinnitus aurium.

21. Comparatively, trials prove it more valuable, in maniacal cases, in producing sleep, than tincture of hyoscyamus or bromide of potassium.

22. Chloral is very useful in the convulsions of children (when there is no severe affection of the bronchi, heart or lungs), but care must be employed not to administer it if the infant or child is very anæmic or in an exhausted condition, as in the case of a wasting disease.

23. The necropsy in case of death from hydrate of chloral shows anæmia of the brain, acute edema of the lungs, hyperæmia of the abdominal organs, and dark fluid blood in the vessels.

Editorial Department.

Periscope.

Stromeyer on Conservative Military Surgery.

The eminent German surgeon, Dr. Stromeyer, delivered a lecture in London last May, from which, as reported in the British *Medical Journal*, we make some extracts:

My results of conservative treatment in gun-shot fractured thigh, during the first three campaigns of 1849, 1850, and 1866, did not go beyond 50 per cent. healed. I saw the reasons of our failures, tried to avoid them, and went on with conservative treatment. In the two campaigns of Schleswig-Holstein (1849 and 1850), the patients had to be carried to considerable distances. After the battle of Langensalza, in 1866, I was unable to prevent that many cases were spoiled by an injudicious use of plaster-bandages. It was in Floing, near Sedan, where we succeeded in saving 77 per cent., 27 amongst 35 patients, who had been carried to no great distance, and were treated without putting much restraint on their shattered limbs.

From my own father I had learned the advantages of Percival Pott's position, which may be employed during the first period in most cases; in others or later the doubled inclined plane, or a straight wire basket, will suffice. According to my opinion, the great principles to be followed in compound fractures in general are—(1) dressing the wounds without lifting the limb; (2) avoiding constriction; and (3) not irritating the muscles in straining them by mechanical contrivances. A gun-shot fractured thigh permits a weight to be suspended to it, keeping the limb a little at rest, like the hand of an assistant, but not an extension by weight or other contrivance, which gives the limb its proper length, except in very few cases, as that mentioned by Mr. MacCormac in his *Notes and Recollections*, which healed without difficulties and without any perceptible shortening. The most common case is, that for some time after the accident the muscles retain a tendency to retract, which is increased by opposition, and ceases by and by in a favorable position of the broken limb. The idea of subduing muscular action by constant extension, even in compound fractures, is not new; but it had not been tried before by contrivances so dangerous as a plaster of Paris bandage. This is applied under chloroform, which relaxes the muscles; the limb is made straight, and as long as its fellow. When the action of chloroform has ceased, the muscles recover their activity, and are kept in extension in spite of their violent efforts to contract, which often break the plaster bandage. The tension, which is kept up by mechanical means, makes the sensibility rise to a high pitch, and severe inflammation follows. If the plaster bandage be loosely applied, by putting wadding and a flannel roller between, it is often well borne, but the limb is as short aftewards as if no bandage had been employed. While I was writing this in Hanover, on the 1st of May, a young captain came to me, from whose gait it was not to be expected that he had had a gun-shot fractured thigh in 1870. A plaster bandage had been applied on the third day; he could not bear it. The surgeon who took it off next day, told him that the fragments had taken a bad position under the bandage. From this time he was treated without restraint, and cured in six weeks, his limb lying in a wire basket. The shortening was one inch of his left lower extremity. His brother met with the same accident at the same time, but was healed with a shortening of five inches. Large splinters came away by suppuration, some of them being three inches long. The captain came to consult me about his brother. He is in service again long ago.

The danger of early plaster bandages on other parts of the skeleton is less than in the thigh; but it exists and is very great in the humerus, where pressure is very liable to stop the venous current, or to drive a splinter of bone into the brachial artery. I treat these fractures by letting the arm lean on a soft cushion, which is tied to the thorax, the fore-arm being suspended in a sling. In

Schleswig-Holstein I had 24 successful cases amongst 29. One of the German surgeons who took part in the late war—Dr. Ruppreeht of Munich—prefers the plaster-bandage; but amongst the three cases which he had to treat, there was one which proved fatal on the seventeenth day, by hæmorrhage, a splinter of bone having opened the brachial artery.

I differ from Mr. Guthrie, besides, in his appreciation of trephining the skull, which I have tried to exclude entirely in military practice, as useless in some and unnecessary in other cases. I consider a state of coma from depressed skull no more as an indication for applying the trepan, than a comatose state in typhus as an indication to rouse the patient from it by any other means but those which are in accordance with his general state—cold, for instance, but not stimulants. As soon as the fragments of skull become detached by suppuration, the comatose state ceases by itself.

The great difficulty in settling this skull-question consists in that some patients survive the use of the trepan, or of an early extraction of splinters, and that some recover their senses very soon after the operation. This seems to be a conclusive proof of the legitimacy of active interference. But there is no depending upon it; the patient may die just as well after having recovered his senses completely, and, as experience has shown, more easily than if you let him continue comatose by not disturbing the splinters. This might have been expected, from very solid physiological reasons. By taking away the splinters at an early period in cases where the dura mater is wounded, you open the arachnoid cavity; air and acrid matter can enter it. Brain-substance, when bruised, thus becomes putrid, while it might have been eliminated by resorption, without access of air. Subcutaneous operations practiced in modern times have done a great deal to put stress on excluding air; but even before their time, Dease and Sir Benjamin Brodie came to a conclusion that access of air was to be avoided in cases of fractured skull, and that no interference ought to take place for depression unless it was warranted by cerebral symptoms. John Hunter was not yet arrived at this degree of caution when he said in his Lectures (Palmer's edition, vol. i. p. 493) "All fractures of the skull may be called compound, for if not so naturally, they are made so by the removal of the scalp."

In the retrograde tendency of surgical interference with a broken skull it was an important step not to remove the scalp; but other steps were to be argued. An open scalp-wound over a broken skull does not produce a great change in the danger of the case. Spreading inflammation of the membranes of the brain or deep-seated suppuration does not necessarily follow from it; but these are very likely to take place if you open the arachnoid cavity by removing the splinters which have kept it closed. When the splinters come away by a very limited suppuration at a later period, the arachnoid cavity is closed by adhesions of dura mater to the brain. It is often impossible to say beforehand whether the dura mater has been opened or not. If it is open, the danger is rendered much greater by removing the splinters. The London *Medical Times* of 1860 contains a list of eighty-three cases in which the trepan had been used, fifty-one of whom died, and thirty-two recovered. Amongst those who did well, the dura mater had been wounded but in three cases; the others, as well, were such that, according to my experience, they might have recovered without using the trepan or early extraction of splinters. Gun-shot fractures of the skull are always compound; their successful treatment without active interference deprives this of one of its strongholds, the presence of an open wound, which formerly seemed to permit further violence. During the two Schleswig-Holstein campaigns of 1849 and 1850, I had to treat forty cases of gun-shot fractured skull, thirty-three of whom recovered, and seven died. We had one case of trephining with happy result, but it was of that description that it might have done well without interference. The others were subjected to an antiphlogistic treatment by ice, bleeding, purgative medicines, and low diet. The splinters were not removed before being quite loose. I have been blamed by Mr. Pirogoff and others for totally excluding active local interference in gun-shot skull fractures; many others have followed my example. You will admit, gentlemen, that there is no knowing of what use a thing may be before having tried it. My object was to know how far we might get without active interference. The result was not unsatisfactory. It was the same thing with treating typhus patients without stimulants. By trying it, on physiological principles derived from morbid anatomy, I tried it and found it very successful. What has pleased me most, from a medical point of view, during the late war, was to find two hospitals in Rheims and one in Versailles where the number of deaths from typhus was not above eight per cent. Weak broth and some ounces of very sour wine were all the stimulants employed till the fever was over. The wine which I tasted was so sour that it must have contained more acid than common vinegar, as I know from comparative experiments with potash. So it probably did the same service as phosphoric acid, which I prefer, with a well boiled water-gruel for diet during the febrile stage. The two hospitals in Rheims were close to each other; in one the patients were cooled by immersion, in the other by active ventilation in tents, while the results were quite the same in both. In other hospitals, the mortality from typhus amounted to 25, even to 50 per cent. Nothing shows the great value of the medical art and science better than such striking differences in the results of treatment, under the same circumstances in regard to constitution, causes and symptoms.

Inertness of Strychnia used Hypodermically.

Dr. Thomas Kennard writes to the *Medical Archives*:—

Noticing some time ago, in the January number of the *American Journal of Medical Sciences*, an article from Dr. J. J. Chisholm, of Baltimore, in regard to the surprising effects of strychnia hypodermically, in the treatment of amaurosis, as first recommended and employed by Professor Nagel, of the University of Tubingen, and in consideration of the eminent position and reputation of both professors, I determined to try the stimulating effects of that drug (as recommended) upon the optic nerve at my earliest opportunity, and accordingly, on the 5th of February, I commenced the hypodermic injection of strychnia with a patient whom I believed was suffering from white atrophy of the optic nerve, and who had had no vision from one eye and very imperfect from the other for several years, and for which trouble every means which promised good had been tried in vain. I was naturally timid in my first experiments with so powerful a remedy, and began with the 1-60th of a grain, which, having no perceptible effect, I then increased day by day, to the 1-40th, 1-30th, 1-24th, 1-15th, 1-12th, without perceiving any benefit or effect whatever. I then, on the seventh day of treatment, used the 1-12th, morning and evening, for some five days, when I combined with it the elixir quiniæ et ferrit strychniæ ʒij, or the 1-30th of a grain of strychnia three times a day, and still perceiving no effect from this heroic treatment, except slight twitching on one occasion, I began to consider my patient strychnia proof, and ventured to increase the hypodermic dose, on the fourteenth day, to the ⅛th, then to the ¼th, 1-5th, and even the ½th, without any perceptible effect, more than I expected from the tonic influence of the elixir taken internally. This patient was a delicate and infirm man, about 50 years of age. Whilst he was under treatment I used hypodermically the same remedy, only increasing the amount injected more rapidly, with a young woman who, within a short space of time, had lost completely the senses of smell, taste and vision, but was apparently otherwise in the enjoyment of perfect health. I commenced with her on the 13th of February with the 1-24th gr., then day by day I increased to the 1-15th, 1-10th, ⅛th, until the sixth day I injected the ¼th, and repeated that dose five days without any perceptible effect whatever, except upon the third or fourth day, when she had some twitching, and her vision was improved slightly, or rather she thought that she could distinguish light from darkness, and perceive large bodies passing her, which she could not do before. She was also taking the elixir internally, 1-30th of a grain of strychniæ three times a day. This improvement was only transient, however.

On the 17th of March I was called to see an Irish woman who for seven or eight months had been suffering with partial paralysis of the arm and leg of the right side, accompanied by a most intolerable feeling of coldness, as if ice was packed on that side. I commenced with the 1-24th of a grain of strychnia hypodermically, and the elixir of quinine, iron and strychnia ʒij internally, three times a day, and gradually increased it to the 1-12th, ⅛th, and the ¼th, which dose I continued until the 27th without any toxical effect whatever. Her limb soon got naturally warm, but most likely from the effects of the strong veratria ointment which I rubbed it with, though perhaps the strychnia produced it, as Echeverria recommends it very highly in such cases, and reports several thus treated satisfactorily.

On the 1st, 2d, 4th and 5th of April I injected the 1-12th, ⅛th, ¼th, and 1-5th of a grain of strychnia into the arm of an old lady 72 years of age, for partial paralysis, with some benefit, but no poisonous effect whatever; there was not the slightest twitching produced in her at any time, and I had employed it with her on one former occasion with the same result.

Such has been my short experience with the hypodermic injection of this powerful remedy, and it differed so materially from the published reports of others, that I thought it worth while to make a note of it; for although authorities have varied in regard to the dose of strychnia to be administered hypodermically, and Courty and Eulenberg have injected as much as the ½th of a grain, the majority have recommended from 1-60th to the 1-24th of a grain, and cautioned us against the dangers of even the latter amount; and so far as I know, none before me have doubted that it would produce its usual physiological and toxic effects when injected beneath the skin.

The Use of Love-Drinks in Ancient Times.

We make the following interesting extract from a lecture by Dr. DAVID FERRIER, Professor of Forensic Medicine in King's College, London, in the *British Medical Journal*:—

Among the Greeks and Romans, Medea was universally regarded as the greatest adept in the art of preparing philtres; and hence the term "*Medeides Herbæ*" was used by Horace and Ovid to designate such substances generally. Next in reputation stand the Thessalian women, who may be supposed to have learned the art from Medea, and who attained great celebrity in all that related to poisoning, sorcery, and incantation. Hence "Thessalian arts" and "Thessalian poisons" are frequently employed by the classical writers as generic terms, applicable to all forms of poisoning*

Philtres are described by Ovid and others as affecting the reason and causing a phrensy which sometimes terminated fatally.

* "Hic magicos affert cantus, hic Thessala vendit Philtra, quibus valeant mentem vexare mariti."—JUV.

"Quæ saga, quis te solvere Thessalis Magus venenis, quis poterit Deus!—HORACE.

"Philtra nocent animis, vimque furoris habent."

Lucretius, the great philosophical poet of the Ciceronian era, is said to have written his poem "On the Nature of Things" in the intervals of delirium occasioned by a philtre or love-potion secretly administered to him by his wife or mistress, Lucilia; and Lucullus, the Roman general, is stated to have died in a state of delirium from a similar cause. The laws of the Twelve Tables contained special provisions against this form of poisoning. It was included under the head of sorcery, and was punished as a capital offence: "*Qui malum carmen incantat, malum venenum faxit duitve, parricida esto.*"—(Table VII.)

Though it would appear, therefore, both from the accounts we have received and from the necessity of special enactments against it, that the administration of philtres often led to results far more serious than were contemplated by those who used them, we can hardly regard otherwise than as a subject of amusement the credulity which prevailed even up to a very late period with respect to many substances held in high repute, and supposed to be possessed of marvelous properties. Most of these substances would hardly come under the head of poisons, or even noxious substances, as we understand them; but yet in most countries their administration was forbidden, as coming under the head of sorcery and witchcraft.

The idea which guided the selection of some of the substances regarded as stimulants of love we might understand, though it would be rather difficult to do so in the case of others. One of the most celebrated agents of this sort is the substance called *hippomane*, described by some as a kind of *vernix caseosa* found on the forehead of a newly born foal; by others, as of a much more disgusting nature ("virus destillans ab inguine equæ coitum maris appetentis"). Animals of various kinds, and parts of certain animals, such as the testicles, the hair from the tip of a wolf's tail, a bone from the left side of a toad devoured by ants, ribs of snakes, etc., were all used as powerful ingredients in love-cups. Menstrual blood, and particularly that of a red-haired woman, was not only greatly esteemed as a philtre, but was regarded also as a most powerful poison. It is a curious circumstance, and one which we find great difficulty in accounting for, that not merely human blood, but the blood of animals in general, was universally looked upon as a poison in ancient times; and that this belief should have been shared by medical writers up to a comparatively recent period. We read in Herodotus that Psammenitus, King of Egypt, was put to death by Cambyses by being made to drink bullock's blood. Such also, according to popular belief, was the mode in which Themistocles committed suicide. Unwilling to fight against his countrymen, he drank a goblet of the blood of a sacrificial ox, and expired almost immediately. Even up to the time of Blumenbach, in the middle of the last century, the belief that blood was poisonous was general, and it was treated of as such in many learned works on poisons and legal medicine. Zacutus Lusitanus, writing in 1657, relates many instances of dreadful effects resulting from the drinking of blood. It is worth while quoting one of these. A student, animated by the spirit of practical joking, gave to another, instead of wine, two ounces of the blood of a red-haired woman mixed with sugar. The victim of this joke did not experience any immediate bad effects, but after a day or two he passed into a raving state, and became ultimately a confirmed idiot.* One is tempted to remark that the individual in question cannot at best have been far removed from this state, if he could mistake for wine the nauseous mixture offered to him. And, in the opinion of Andreas Cæsalpinus, who nearly anticipated Harvey in the discovery of the circulation, it is to human blood that we owe the origin of one of the most virulent contagious diseases. He traces the origin of syphilis to the fact that the Spaniards, in abandoning the small town of Somma, at the foot of Mount Vesuvius, mixed all the wine of the place with the blood of the patients in the hospital of St Lazarus.

Blumenbach, in his lectures, recommended his students to make experiments in order to clear up all doubts as to the poisonous qualities of blood. One student experimented on himself, and drank seven ounces of warm bullock's blood without experiencing any evil effects. Another preferred to experiment on a dog, which likewise survived the experiment.

Returning from this digression on blood once more to the subject of philtres, we find that the belief in them was strong even as late as the time of Van Helmont, in the middle of the seventeenth century. Van Helmont himself was fully persuaded of their efficacy, and perhaps the most remarkable statement in regard to them occurs in one of his writings. Here is a translation of it: "I know a plant of common occurrence, which, if you rub and cherish in the hand until it becomes warm, and then take the hand of another and hold it till it also becomes warm, that person will forthwith become stimulated with love for you, and continue so for several days."

A plant is mentioned by Theophrastus, to which even more powerful effects were ascribed, but which need not be more particularly specified.

There were not a few, however, even in ancient times, who were skeptical as to philtres. Ovid, who speaks so much of them, had his doubts; and, in a letter to a young lady, he recommends, as far the most preferable prescription, "*ut ameris, amabilis esto.*"

From these and similar truths, the influ-

* Fatuus in eternum remansit, quum nullo remediorum genere posset hæc stultitia emendari."—Quoted by Marx, *Gifflehr.*, ii, 274.

ence of philtres gradually ceased to be believed in, and disappeared from medical literature by the middle of the eighteenth century.

Treatment of Retention of Urine.

A plan of treating retention of urine is suggested by Dr. A. W. STEIN in the *Medical Record*. He says—I tested it for the first time last summer, upon a patient whom I attended with Dr. E. G. Rawson. He was nearly eighty years of age, and suffering from extreme distention of the bladder depending upon stricture and prostatic enlargement. A delicate catheter was with difficulty introduced, and the bladder partially relieved; but, owing to the atonic condition of the organ, it was unable to completely evacuate its contents. Whereupon I attached my rubber-tube to the catheter, and, having previously compressed the bulb, allowed it *very slowly and carefully* to expand. In this manner I succeeded in removing an additional pint or more of stale ammoniacal urine, which, in consequence of the feeble condition of the patient, could not have been expelled in any other way. I have since had occasion to satisfy myself that this operation is eminently adapted to cases where over-distention has existed for some time, and especially in advanced life, or in those affected with enlarged prostate, in whom a sort of pouch or permanent reservoir so frequently exists at the "bas-fond." The advantages derived from thoroughly evacuating the bladder before local treatment is instituted in chronic cystitis are obvious.

REVIEWS AND BOOK NOTICES.

BOOK NOTICES.

A System of Surgery; Pathological, Diagnostic, Therapeutic and Operative. By SAMUEL D. GROSS, M. D., LL. D., D. C. L. Oxon., Professor of Surgery in the Jefferson Medical College of Philadelphia. Illustrated by upwards of fourteen hundred engravings. Fifth edition, greatly improved and thoroughly revised. In two volumes. Philadelphia: H. C. Lea, 1872. pp. 1098—1170.

The question but recently sneeringly asked, "Who reads an American book?" has here a fitting reply. Prof. Gross has good cause for self-gratulation. This, the great work of his life, has been adopted throughout the whole country, and is constantly quoted as the standard authority. Not only is this the case at home, where its author is so well known and respected for his vast surgical knowledge, but abroad; our brethren on the other side of the waters have universally commended it. The Dutch have even appropriated it and made it fully their own by translating it into their language.

Nor is this edition a mere reprint, for a careful examination of these two bulky volumes shows a most careful revision, with the addition of much valuable matter. These additions are so vast and valuable as to make it almost a matter of necessity for those who already possess former editions of the work to add this to their array of authorities. Thus we find many and valuable additions on the subject of gun-shot wounds, well illustrated by cuts obtained from the office of the Surgeon General of the United States; Dr. Wm. Thompson, an authority on Diseases of the Eye, has taken charge of that department, and added chapters on refraction and accommodation.

One chapter has been devoted to Railway Injuries, a subject which is becoming increasingly important, frequently requiring of the surgeon a ready adaptability of his knowledge for injuries of a novel form.

We congratulate the learned Professor on his success in book-making, and the profession on the possession of so valuable a text book, which will rarely fail them when consulted.

While we find so much to commend, we cannot refrain from regretting the absence of some allusion, in the chapter on Carcinoma, to the views of Dr. Washington L Atlee, of this city, as to the value of continued and long-repeated doses of arsenic to prevent the return of that disease. Dr. A. has repeatedly expressed his earnest belief in the powers of this drug to prevent the return of cancer. In this he has been confirmed by his venerable brother, Dr. John L. Atlee, of Lancaster, Pa., and others.

The publishers have gotten up the work in their usual style, the typography proving satisfactory to the eyes of the reader.

We cannot close our hasty notice without adding a word as to the copious index. A complete analytical index is a necessity to every book, but vastly important to a work which will be so frequently consulted as an authority like this. The busy physician has no time to waste, and requires to find the object of search at a glance. Hence an index which shows him at once where he may find all that the work contains on the subject of his inquiries is truly invaluable.

MEDICAL AND SURGICAL REPORTER.

PHILADELPHIA, AUGUST 31, 1872.

S. W. BUTLER, M. D., D. G. BRINTON, M. D., Editors.

☞ Medical Societies and Clinical Reports, Notes and Observations, Foreign and Domestic Correspondence, News, etc., etc., of general medical interest, are respectfully solicited.

Articles of special importance, such especially as require original experimental research, analysis, or observation, will be liberally paid for.

☞ To insure publication, articles must be *practical*, *brief* as possible to do justice to the subject, and *carefully prepared*, so as to require little revision.

☞ Subscribers are requested to forward to us copies of newspapers containing reports of Medical Society meetings, or other items of special medical interest.

We particularly value the practical experience of country practitioners, many of whom possess a fund of information that rightfully belongs to the profession.

The Proprietor and Editors disclaim all responsibility for statements made over the names of correspondents.

THE STUDY OF DISEASE.

Other capacities being equal, that which distinguishes an eminent practitioner is knowledge of disease.

What this phrase means is not quite clear. At the basis of many long and bitter discussions lies an ignorance of the meaning of words. Counters for the wise, words are the sterling metal of the unwise. That the pattest phrase or the roundest word may be empty of any idea at all, is a shocking fact to the latter class.

A recent address on therapeutics lays great stress on the importance of studying the disease when left to itself, without medicine. The speaker maintains that this inquiry "should be answered before any rational administration of drugs could be determined on. An answer was sought for, but in vain. The books did not give the desired information. All the cases they furnished had been submitted to remedial agents of real or supposed efficacy. The question appeared never to have been thought of; or, if thought of, not to have been deemed worthy of solution, or even of consideration."

The basis for rational therapeutics, the writer believes, is a study of the nature and progress of disease in its undisturbed course. He asserts:—

"If this question had been thought of, and an attempt made, whenever practicable, to answer it, for Asiatic cholera, on and since its appearance nearly half a century ago, the profession might have established, possibly by this time, some rational course to pursue, instead of being left to rush blindly, as much at a loss as ever, into all sorts of treatment; and we might have been saved the mortification of witnessing a recantation, at the last hour, of one of the most eminent and influential teachers, now recommending a course quite opposite to that which he has taught with 'silver-tongued eloquence' for forty years past. If the plan now advocated by him is right, then countless patients have suffered at the hands of his numerous disciples up to this time."

The inference which is plainly drawn is that owing to neglect of this way of studying disease, therapeutics are in their present unsatisfactory condition, and the world has grievously suffered from the *nimia diligentia medici*.

The assumption here is that a disease is an entity, which we can study as we can a flower or a fossil; that having seen it once or several times, we can thereafter recognize its features and forecast its results. There is enough of truth in this view to make it attractive, and enough of fallacy to make it dangerous. With sparse exceptions, a disease is a fluctuating aggregation of symptoms, alike in no two cases, in progress and termination influenced by so many unknown factors, that to watch one or many cases to their close could afford no ground for a prediction about the next one.

The much decried and much abused plan of empiricism is after all the only national basis of therapeutics. Through it alone, every valued remedial agent we possess was obtained. The unpleasant associations which have clustered like foul parasites to that venerable name should not alarm the votary of sound knowledge.

Given, a certain collection of symptoms,

distressing or painful, our duty is directly to remove them. If we have the means, let them be applied at once; if we have not, what avails it to stand apart in idleness or in barren sympathy? With judgment, caution, and close attention, we should try one after another, and over and over again, those remedies which we believe most likely to decrease the suffering. This is the rational basis of therapeutics, and to do this well and skillfully should be our object in studying disease.

Correspondence.

Cowardly and Brutal Inhumanity.

Eds. Med. and Surg. Reporter:—

The harrowing stories the newspapers are continually circulating, of a woman abandoned to small-pox and death, and which, no doubt, have come under the observation of many of your readers, it seems to me require, for the benefit of those who are not in a situation to know the exact facts in the matter, a statement on the part of some member of the profession, through the medical press, who is qualified to give information of the truth or falsity of the occurrence alleged.

I have taken considerable pains to learn from reliable sources whether the exaggerated accounts as published so extensively be true, and I regret to state that they represent substantially the real facts in the case. In the most lenient view of the affair, the occurrence, to my mind, exhibits a piece of barbarism and inhumanity that is a disgrace to the community that permitted it to occur, and reflects, as well, a reproach upon the civilization of the age.

The story briefly told is an instance of inhuman cowardice from fear of the contagion of small-pox; and an abandonment of the victim of the disease to neglect of care, nursing or medical attendance; and, finally, when death closes the scene as to her earthly misery, letting her body remain exposed to be preyed upon by the cats and dogs in the neighborhood of the untenanted hut to which she had been consigned, till her remains, from putrefaction, became a stench in the atmosphere of her secluded and shunned abode.

In this inevitable recital I ought to except *one* being in whom lingered, in that shameless region, a spark of human sympathy and kindness. But of this single instance of display of humanity I will more particularly speak in connection with the narration of the story.

The woman in question, whose last days and tragic death have rendered her so famous, was named Butler. She was comparatively young; but whether a *Miss* or *Mrs.* Butler I am not satisfactorily advised. At the commencement of her sickness she was employed as a domestic in a family by the name of Smith, residing near the village of Unionville, New York, and close upon the borders of New Jersey. Not long previously she had, unknown to Mr. Smith's family, been engaged in nursing a woman living at Gardnerville, near Unionville, who, it transpired, had small-pox. Upon the appearance of symptoms of that disease, she was sent away, and repaired to the house of a man named Seeley, with whom she had formerly lived as his wife. As soon as he learned the nature of her illness, he took her to an old house in the woods near his own residence. A physician of Unionville was called to see her, visiting her but once; afterwards calling at a considerable distance from the house, prescribing for the patient, and leaving the medicines with Seeley. Provisions were supplied in the same way.

The old house in which the woman lay was on the edge of the drowned lands, just over the Jersey line, in the town of Wantage; and there was no adequate protection from rain or light, by reason of the dilapidated condition of the hovel.

Here, without proper care, treatment or attention, the unfortunate woman was compelled to remain; and in the loneliness, desolation and horror involved in the situation, even the faithful Seeley's courage could not sustain him in the last, final close of the poor woman's earthly career. Witnessing death about to summon away the object of his care, he hastened to the nearest neighbor to announce her approaching end. The neighbor gave him soap and a suit of clothes. After he had cleansed himself in the nearest stream, he donned this new suit, returned to his home, ceasing all further interest in the woman over whom, when forsaken by every other human being, he had watched with such singular fidelity.

The body of the deceased woman was permitted to lay in the horrible place of her solitude from Friday morning until the following Tuesday, the 18th instant, the poor authorities of the town, in the matter of her burial, evidencing a meanness in keeping with that which, from first to last, characterized the conduct of all living where the miserable woman did. Her interment was delayed during the time mentioned. In the interval the cats and dogs of the neighborhood going freely in and out of the hovel, and doubtless spreading the contagion as they went, because of the unwillingnes of the poor-master to pay a party early applied to the paltry sum of $25 for the loathsome service, fixing *his* maximum offer at $20. Finally, but not till decomposition had rendered the office well nigh impracticable, he found parties willing, though at greatly increased figures above his first offer, to bury the remains of this disgracefully neglected woman.

The present age of advanced medical science, especially when we consider the wonderful discovery of vaccination, which has for so many years been found to be an almost infallible protection from small-pox, certainly leaves the inhuman cowardice in the case which I have related, without excuse or shadow of excuse.

J. H. THOMPSON, M. D.

Goshen, N. Y., June 29, 1872.

Poisoning by Stramonium.

EDS. MED. AND SURG. REPORTER:—

Happening to read over notes of a case of poisioning by stramonium seeds, and also this same afternoon to read in your valuable journal a similar case reported by Dr. Brunning, I think it may be worth while to send you my case.

I have no doubt but that many such occur every autumn, of children eating and being poisoned by a plant which is so common in almost all parts of our country, and, as in Dr. B.'s case, sometimes some medico-legal interest may enhance their importance.

October 20, 1866, I was called in the evening to see a child of Mrs. N., a little girl, three years of age. I found it in a state of wild delirium. It was with great difficulty that the mother could hold it on her lap. It would forcibly throw out its legs and stiffen them, and at the same time throw them wide apart from each other. The arms were being constantly thrown out, as if trying to reach and get hold of something; and sometimes it seemed as if some object had been secured, and was for a moment fumbled in the fingers. The pupils were dilated, and the eye looked wild. Its cry was a kind of scream; a little froth was seen in the mouth; the surface of the skin was hot; the restlessness was very great.

Suspecting poisoning, I gave it an emetic of ipecac., with a little turpeth mineral. It soon vomited, and together with what it had eaten at tea time (which was chiefly bread), a good many little black seeds were observed, which were soon found to be the seeds of the stramonium, many plants of which grew near the house. Afterwards, a dose of castor oil was given, and more of the seeds were passed from the bowels.

The symptoms continued through the night, and, in an abated form, part of the next day. The mouth and throat were very dry, and the saliva very viscid, but by the next evening these, with the other symptoms, so much lessened that the child slept some, and the next day but one after the poisoning it was pretty well, with the exception of some croupy cough, which probably came from wetting of the head and other exposure during the first night of the sickness.

Some two years ago I was called at daylight one morning to see a child said to have died very suddenly and unexpectedly at our orphan asylum. The matron informed me that the child, a little boy of about three years, had been subject to fits, the cause of which was not known, and he was never well and strong; that the night before he had behaved rather strangely, and appeared wild, but that she did not think him dangerously ill. She put him to bed with one of the older girls to take care of him. In the night he tried often to get out of bed, and once did so, and also out of the room to the stairway and fell down two or three steps. He was put to bed again, and it was supposed he went to sleep. At all events, the girl (his attendant) slept, so that it was not known till near morning what happened and then he was found apparently struggling in a convulsion, and soon died.

I supposed, and gave it as my opinion from all I had heard, that he died from a fit, which might have been an aggravated one of the kind he had had before. But a

few days after it was found that the children had been gathering stramonium seeds and making strings of them, some of the plants being just outside the grounds. One little girl was said to have eaten them, so that the matron gave her an emetic. Learning this, I particularly questioned the matron concerning the symptoms of the child that died, and she told me of his restlessness, and reaching out after some imaginary thing, his wild look, etc., so much like those of the child I had attended, that I became convinced that it died from poisoning by the stramonium. Recently, some evil-disposed persons, dismissed from the employ of the asylum at the time the matron took charge, have, among other reports, asserted that the little boy, said to have died in a fit, was cruelly beaten, starved, etc., by the matron, and came to its death in consequence. No evidence worthy of belief can be adduced of this; and in this connection the symptoms of the poisoning, given without any knowledge of what might be expected, are important and interesting.

I notice that a cutaneous eruption, a red rash, is mentioned in the books as a symptom of stramonium poisoning. I do not remember that my patient had it, but the skin of the little orphan boy was found, after death, mottled in a marked degree.

A. W. ROGERS, M. D.

Paterson, N. J., July 22, 1872.

NEWS AND MISCELLANY.

Patents Issued.

List of Medical and Surgical Patents issued from the United States Patent Office to Inventors, for the week ending July 30, 1872, and each bearing that date. Furnished this paper by Cox & Cox, Solicitors of Patents, Washington, D. C.:—

Medical Compound for Cure of Colic, etc.—W. W. Gardner, Russellville, Kentucky.

Medical Compound or Cough Lozenge—E. Gauvreau, Quebec, Canada.

Dentist's Chair—O. C. White, Hopkinton, Massachusetts.

Changes in the College of Physicians and Surgeons of New York.

Dr. James W. Lane has resigned the chair of Materia Medica and Therapeutics, and been appointed Adjunct Professor of Obstetrics and the Diseases of Women and Children. Edward Curtis, M. D., has been appointed Lecturer on Materia Medica and Therapeutics, and Charles F. Chandler, Ph. D., Adjunct Professor of Chemistry.

Personal.

FROM letters just received from Professor Gross we have the assurance that he will leave Liverpool on the 24th proximo, and that he will be in Philadelphia in time for the opening of the Fall course of lectures in the Jefferson Medical College.

WE are glad to announce that Professor W. A. Gobrecht, of Cincinnati, has much improved in his general health since his stay in Philadelphia.

DR. ROBERT AMORY, of Franklin, has been appointed Professor of Physiology in the Maine Medical School.

PROF. TYNDALL is about to visit the United States.

An Objection to Opening Medicine.

The Cincinnati *Medical News* tells of a man who swallowed a penknife. He did well, for the knife was closed; but some M. D. gave him *opening* medicine, and that settled him.

New College.

The College of Physicians and Surgeons has been established in Wilmington, N. C., with Dr. W. W. Lane as Dean.

Anæsthesia.

A new claimant appears, having discovered it in May, 1843. Now for the one who discovered it in 1842!

A NEW stimulant has been invented in England, whose growing use is exciting considerable alarm. The stuff consists of a mixture of naphtha and ether, and it produces a kind of intoxication which its admirers find highly agreeable. No check can be put on the consumption of the fluid, for the reason that it is not sold under the name of any excisable spirit, and apparently an act of Parliament will have to be devised to meet the difficulty.

THE Kansas City *Medical Journal* is after Dr. D. W. Yandell for his address before the American Medical Association, in Philadelphia. The editor regards Dr. Y. as slightly in error in his views on medical education.

DR. JONATHAN D. MARVIN died recently, at his residence, near Morristown, N. J., aged 83 years. He was an elder in the First Presbyterian Church at Morristown for nearly forty years.

ACCORDING to the index of the last revision of the statutes of Maine, it is illegal to expose veal for sale in that State less than four years old.

MEDICAL registers are announced as in preparation for Chicago, Boston, and other places. Such books are valuable. Success to them.